



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicants: Harold Wiesmann *et al.* Confirmation No.: 4758  
Serial No.: 10/622,843 Group Art Unit: 1762  
Filed: July 18, 2003 Examiner: Brian K. Talbot  
For Fluorinated Precursors of Superconducting Ceramics,  
and Methods of Making the Same

Mail Stop Amendment  
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**DECLARATION UNDER 37 C.F.R. § 1.132**

The undersigned, Harold Wiesmann of Stony Brook, New York, herewith declares as follows:

1. My publication list is attached.
2. I am co-inventor of the patent application identified above.
3. The present invention includes a method of making fluorinated precursors of superconducting ceramics. The steps of the method include spraying a precursor solution onto a substrate to provide a precursor-covered substrate. The precursor-covered substrate is then fluorinated by heating in an atmosphere containing fluorinated gas. A fluorinated precursor is formed.
4. After formation of the fluorinated precursor, the precursor of the present invention is converted into a crystalline superconductor by annealing. Fluorine in the precursor enhances epitaxial growth during the conversion.

5. The crystalline superconductor formed by the present invention contains only trace amounts of fluorine.

6. Gressler *et al.* (U.S. Patent No. 5,081,103) describe methods and products which are fundamentally different from the methods and products of the present invention.

7. Gressler *et al.* teach a method of structurally incorporating fluorine into the  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  crystalline structure.

8. In the Gressler *et al.* method, a crystalline superconducting material is fluorinated. In particular, oxygen-deficient  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  crystalline powder is fluorinated by annealing the crystalline powder in the presence of a fluorine containing gas. Figure 2 of Gressler *et al.* shows the X-ray diffraction pattern of the superconducting crystalline powder before fluorine-treatment and after treatment.

9. Chevalier *et al.* (U.S. Patent No. 5,132,281) describe methods and products which are fundamentally different from the methods and products of the present invention.

10. Chevalier *et al.* teach a method of incorporating fluorine into the structure of superconducting materials.

11. In the Chevalier *et al.* method, a crystalline superconducting material is fluorinated.

12. In sum, the method of the present invention is completely different from the methods disclosed by Gressler *et al.* and Chevalier *et al.* In particular, in the present invention, precursor materials are fluorinated; whereas, in the cited references, superconducting materials are fluorinated. Fluorinating a crystalline superconducting material is fundamentally different

from fluorinating a precursor material. Also, the product of the present invention is completely different from the products disclosed by Gressler *et al.* and Chevalier *et al.*

13. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. Further that these statements were made with the knowledge that willfully false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code, and that such willfully false statements may jeopardize the validity of the application of any patent issued thereon.

Respectfully submitted,

12/13/88  
Date

  
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Harold Wiesmann



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